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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/659,184
Filing Date: September 10, 2003
Appellant(s): LI ET AL.

Charles H. Livingston
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/9/2010 appealing from the Office action mailed 6/24/2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

6,674,879	Weisman et al	1-2004
2003/0234876	Bloom et al	12-2003
5,954,653	Hatfield et al	9-1999
4887306	Hwang	12-1989
6,879,729	Kamath et al	4-2005
5322067	Prater et al	6-1994

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 28, 30, 32, 34-35 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 6,674,879 issued to Weisman et al. ("Weisman") in further view of Bloom et al US 2003/0234876.

Re claim 28 Weisman discloses receiving a processed data stream from a processor (echo machine column 12 lines 50-55) filtering the processed data stream with a first value set of speckle reduction parameters to produce a first image stream (moderate speckle reduction column 13 lines 1-5); or filtering the processed data stream with a second value set of speckle reduction parameters to produce a first image stream (heavy speckle reduction column 13 lines 1-10) and simultaneously co-displaying on a common screen a first image speckle reduced image that's is generated from the first image data stream, and other images (see figure 5 column 13 lines 1-13). Weisman shows four images that are simultaneously co-displayed on a common screen, one of which is the raw image. The image next to the raw image is the speckle reduced image.

Weisman does not expressly disclose " filtering using both the first and second sets of parameters and Simultaneous co-displaying on a common screen a first speckle reduced image that is generated from a first image data stream and a second speckle reduced image that is generated from a second data stream." Bloom discloses displaying simultaneous co-displaying on a common screen a first processed image that is generated from a first image data stream and a first set of parameters and a second processed image that is generated from a different set of parameters and a first image data stream (see figure 5 and paragraph 39 multiple filtered images with the parameters differently optimized are presented to select the best filtered image), to allow the user to select the best picture in light of their own interpretation(see paragraph 39). It would have been obvious to modify selection of the speckle as described in column 13 lines 1-5) of Weisman with the display of Bloom to perform filtering with more then one set of speckle reduction parameters and simultaneous co-displaying on a common screen a first speckle reduced image that is generated from a first image data stream and a second speckle reduced image that is generated from a second data stream for the purpose of allowing the operator to choose the best speckle reduced image. Therefore it would have been obvious to combine Weisman with Bloom to reach the aforementioned advantage.

Re claim 30 Weisman discloses simultaneously co-displaying, comprises simultaneously co-displaying in a dual mode (quad screen column 13 lines 5-10) said

method further comprising, enabling a user to enter the dual display mode at least one of during a scan, a replay of pre-recorded cine loops, and a display of a still image that is not updated periodically (video source see column 12 lines 54-column 13 line 15).

Re claim 32 Weisman discloses simultaneously co-displaying an original unfiltered image on the common screen with the first speckle reduced images wherein the unfiltered image is generated from the processed data stream (column 13 lines 1-15).

Re claim 34 Weisman discloses wherein the first speckle reduced image has less speckle reduction than the second speckle reduced image (column 13 lines 1-13)

Re claim 35 Weisman discloses wherein filtering the processed data stream with a second value set of speckle reduction parameters comprises changing the values of the first values set or speckle reduction parameters (column 13 lines 1-15) during at least one of a scan (column 12 lines 54-67).

Re claim 37, claim 37 is rejected for similar reasoning to that of claim 28.

Claims 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 6,674,879 issued to Weisman et al. (“Weisman”) and Bloom in view of Hatfield et al US 5954,653.

Re claim 29 Weisman discloses the elements of claim 28. Hatfield discloses increasing a range over which values of data included in the image data stream are distributed to improve contrast of a filtered image generated from the image data stream (entire application beginning with the title).

It would have been obvious to one of ordinary skill in this art at the time of invention to include the enhanced contrast method of Hatfield with the ultrasound speckle reduction filter of Weisman, for the benefit of being able to achieve the best image quality when performing three-dimensional reconstruction of ultrasound images, as taught by Hatfield in column 2 lines 50-54.

Claims 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 6,674,879 issued to Weisman et al. and Bloom in view of Hwang US 4,887,306.

Re claim 31 Weisman discloses the elements of claim 28 Hwang discloses the filtering step is based on adjustable parameters, the method further comprising: automatically, without user intervention, optimizing the parameters based on a scan of an imaging system and what is being imaged (col. 2 line 48 through col. 3 line 2)

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the speckle noise filter of Weisman to adaptively adjust the filter parameters based on what is being imaged. In this case, the particular known problem that an

ultrasound of a liver produces more speckle than an ultrasound of cardiac valves was solved by the known technique of adjusting the speckle reduction parameters adaptively, without user intervention as disclosed by Hwang. One of ordinary skill in the art can combine the filtering of Weisman with the adaptive filtering of Hwang to yield the predictable result of filtering data subsets adaptively based on what is being imaged to generate a speckle reduced image.

Claims 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 6,674,879 issued to Weisman et al. and Bloom in further view of Kamath et al US 6,879,988.

For claim 33 Weisman discloses all of the elements of claim 28 and a speckle reduction filter. Figure 7 of Kamath discloses dividing the processed data stream into data subsets (step 72 partitioning data into regions and distributing regions onto processors) and simultaneously filtering the data subsets (step 75 thresholding wavelet coefficients of transformed data) and producing a first image data stream based on the filtered data subsets (original displaying format see abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the simultaneous filter of Kamath with the speckle noise filter of Weisman because Kamath provides the motivation at column 5 lines 3-7 of peforming “a substantial amount of processing on very large data sets,” which can occur when “the data is in the form of images”.

Claims 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 6,674,879 issued to Weisman et al. ("Weisman") and Bloom in view of Prater et al US 5,322,067.

Re claim 36 Weisman discloses an ultra sound imaging system comprising:(a transducer array (column 1 lines 20-25) a processor for processing a receive beam (column 5 lines 60-65)a scan converter and display controller operatively coupled to the transducer array and the processor, where in the scan converter and display controller are configured to and receiving a processed data stream from a processor (echo machine column 12 lines 50-55) filtering the processed data stream with a first value set of speckle reduction parameters to produce a first image stream (moderate speckle reduction column 13 lines 1-5); filtering the processed data stream with a first value set of speckle reduction parameters to produce a first image stream (hevey speckle reduction column 13 lines 1-10) and simultaneously co-displaying on a common screen a first image speckle reduced image that's is generated from the first image data stream, and other images (see figure 5 column 13 lines 1-13).
Weisman shows four images that are simultaneously co-displayed on a common screen, one of which is the raw image. The image next to the raw image is the speckle reduced image.
Weisman does not expressly disclose "Simultaneous co-displaying on a common screen a first speckle reduced image that is generated from a first image data stream and a second speckle reduced image that is generated from a second data stream."

Bloom discloses displaying simultaneous co-displaying on a common screen a first processed image that is generated from a first image data stream and a second processed image that is generated from a first image data stream (see figure 5 and paragraph 39 multiple filtered images are presented to select the best filtered image), to allow the user to select the best picture in light of their own interpretation(see paragraph 39). It would have been obvious to modify selection of the speckle as described in column 13 lines 1-5) of Weisman with the display of Bloom to perform "simultaneous co-displaying on a common screen a first speckle reduced image that is generated from a first image data stream and a second speckle reduced image that is generated from a second data stream" for the purpose of allowing the operator to choose the best speckle reduced image.

Weisman does not explicitly recite a beam former however this feature is disclosed in Prater column 4 lines 15-20). The motivation to combine is covert the received ultrasound energy into a focuses receive beam (column 4 lines 15-20). Therefore it would have been obvious to combine the workstation in Weisman with the ultrasound machine in Prater.

Claims 38, 40, 42, and 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 6,674,879 issued to Weisman et al. ("Weisman") and Bloom in view of Kamath.

Re claim 38 Weisman discloses receiving a processed data stream from a processor (echo machine column 12 lines 50-55), changing values of the speckle reduction parameters between first (low speckle reduction column 13 lines 1-13) and second (high speckle reduction column 13 lines 1-13) to for first and second image data streams, and simultaneously co-displaying on a common screen a first image speckle reduced image that's is generated from the first image data stream, and other images (see figure 5 column 13 lines 1-13).

Weisman shows four images that are simultaneously co-displayed on a common screen, one of which is the raw image. The image next to the raw image is the speckle reduced image.

Weisman does not expressly disclose "Simultaneous co-displaying on a common screen a first speckle reduced image that is generated from a first image data stream and a second speckle reduced image that is generated from a second data stream."

Bloom discloses displaying simultaneous co-displaying on a common screen a first processed image that is generated from a first image data stream and a second processed image that is generated from a first image data stream (see figure 5 and paragraph 39 multiple filtered images are presented to select the best filtered image), to allow the user to select the best picture in light of their own interpretation(see paragraph 39). It would have been obvious to modify selection of the speckle as described in column 13 lines 1-5) of Weisman with the display of Bloom to perform "simultaneous co-displaying on a common screen a first speckle reduced image that is generated from a first image data stream and a second speckle reduced image that is generated from a

second data stream" for the purpose of allowing the operator to choose the best speckle reduced image.

Kamath discloses in figure 7 dividing the processed data stream into data subsets (step 72 partitioning data into regions and distributing regions onto processors) and simultaneously filtering the data subsets (step 75 thresholding wavelet coefficients of transformed data) and producing a first image data stream based on the filtered data subsets (original displaying format see abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the simultaneous filter of Kamath with the speckle noise filter of Weisman because Kamath provides the motivation at column 5 lines 3-7 of peforming "a substantial amount of processing on very large data sets," which can occur when "the data is in the form of images".

Re claim 40 Weisman discloses simultaneously co-displaying, , comprises simultaneously co-displaying in a dual mode (quad screen column 13 lines 5-10) said method further comprising, enabling a user to enter the dual display mode at least one of during a scan, a replay of pre-recorded cine loops, and a display of a still image that is not updated periodically (video source see column 12 lines 54-column 13 line 15).

Re claim 42 Weisman discloses simultaneously co-displaying an original unfiltered image on the common screen with the first speckle reduced images wherein the unfiltered image is generated from the processed data stream (column 13 lines 1-15).

Re claim 44 Weisman discloses wherein the first speckle reduced image has less speckle reduction than the second speckle reduced image (column 13 lines 1-13)

Re claim 45 Weisman discloses wherein filtering the processed data stream with a second value set of speckle reduction parameters comprises changing the values of the first values set or speckle reduction parameters (column 13 lines 1-15) during at least one of a scan (column 12 lines 54-67).

Re claim 46, claim 46 is rejected for similar reasoning to that of claim 38.

Claims 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 6,674,879 issued to Weisman et al. ("Weisman"), Bloom and Kamath in view of Hatfield et al US 5954,653.

Re claim 39 Weisman and Kamath disclose the elements of claim 38. Hatfield discloses increasing a range over which values of data included in the image data stream are distributed to improve contrast of a filtered image generated from the image data stream (entire application beginning with the title).
It would have been obvious to one of ordinary skill in this art at the time of invention to include the enhanced contrast method of Hatfield with the ultrasound speckle reduction

filter of Weisman, for the benefit of being able to achieve the best image quality when performing three-dimensional reconstruction of ultrasound images, as taught by Hatfield in column 2 lines 50-54.

Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Weisman Bloom and Kamath in view of Hwang US 4,887,306.

Re claim 41 Weisman, Bloom and Kamath disclose the elements of claim 38 Hwang discloses the filtering step is based on adjustable parameters, the method further comprising: automatically, without user intervention, optimizing the parameters based on a scan of an imaging system and what is being imaged (col. 2 line 48 through col. 3 line 2)

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the speckle noise filter of Weisman to adaptively adjust the filter parameters based on what is being imaged. In this case, the particular known problem that an ultrasound of a liver produces more speckle than an ultrasound of cardiac valves was solved by the known technique of adjusting the speckle reduction parameters adaptively, without user intervention as disclosed by Hwang. One of ordinary skill in the art can combine the filtering of Weisman with the adaptive filtering of Hwang to yield the predictable result of filtering data subsets adaptively based on what is being imaged to generate a speckle reduced image.

Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 6,674,879 issued to Weisman et al. and Bloom in further view of Kamath et al US 6,879,988 in view of examiners official notice.

For claim 43 Weisman, Bloom and Kamath disclose all of the elements of claim 38 and a speckle reduction filter the do not disclose a SIMD processor however it is norotriously well known in the art to use a SMID processor to simultaneously perform processing of data. The motivation to combine is well known to quickly and simultaneously process data. Therefore it would have been obvious to one of ordinary skill in the art to combine Weisman and Kamath to reach the aforementioned advantage.

Claims 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 6,674,879 issued to Weisman et al. ("Weisman",) Bloom and Kamath in view of Prater et al US 5,322,067.

Re claim 47 Weisman discloses an ultra sound imaging system comprising:(a transducer array (column 1 lines 20-25) a processor for processing a receive beam (column 5 lines 60-65)a scan converter and display controller operatively coupled to the transducer array and the processor, where in the scan converter and display controller are configured to and receiving a processed data stream from a processor (echo machine column 12 lines 50-55) filtering the processed data stream with a first value set of speckle reduction parameters to produce a first image stream (moderate speckle

reduction column 13 lines 1-5); filtering the processed data stream with a first value set of speckle reduction parameters to produce a first image stream (heavy speckle reduction column 13 lines 1-10) and simultaneously co-displaying on a common screen a first image speckle reduced image that's is generated from the first image data stream, and other images (see figure 5 column 13 lines 1-13).

Weisman shows four images that are simultaneously co-displayed on a common screen, one of which is the raw image. The image next to the raw image is the speckle reduced image.

Wiesman does not expressly disclose "Simultaneous co-displaying on a common screen a first speckle reduced image that is generated from a first image data stream and a second speckle reduced image that is generated from a second data stream."

Bloom discloses displaying simultaneous co-displaying on a common screen a first processed image that is generated from a first image data stream and a second processed image that is generated from a first image data stream (see figure 5 and paragraph 39 multiple filtered images are presented to select the best filtered image), to allow the user to select the best picture in light of their own interpretation(see paragraph 39). It would have been obvious to modify selection of the speckle as described in column 13 lines 1-5) of Weisman with the display of Bloom to perform "simultaneous co-displaying on a common screen a first speckle reduced image that is generated from a first image data stream and a second speckle reduced image that is generated from a second data stream" for the purpose of allowing the operator to choose the best speckle reduced image.

Weisman does not explicitly recite a beam former however this feature is disclosed in Prater column 4 lines 15-20). The motivation to combine is covert the received ultrasound energy into a focuses receive beam (column 4 lines 15-20). Therefore it would have been obvious to combine the workstation in Weisman with the ultrasound machine in Prater.

Kamath discloses in figure 7 dividing the processed data stream into data subsets (step 72 partitioning data into regions and distributing regions onto processors) and simultaneously filtering the data subsets (step 75 thresholding wavelet coefficients of transformed data) and producing a first image data stream based on the filtered data subsets (original displaying format see abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the simultaneous filter of Kamath with the speckle noise filter of Weisman because Kamath provides the motivation at column 5 lines 3-7 of performing “a substantial amount of processing on very large data sets,” which can occur when “the data is in the form of images”.

(10) Response to Argument

Appellant’s arguments focus on two references Weisman et al. US 6,674,879. and Bloom et al US 2003/0234876. Below is a description of the two references and how they are applied to the claims.

Weisman is a reference for view ultra sound images/videos (column 12 lines 50-60) which have been processed by user selected parameters (column 13 lines 1-15). Weisman may also display the image after various processing steps (see figure 7). Note, the upper left is a raw image with no processing, the upper right has been speckle reduced, the lower left is the speckle reduced images with edge detection and the lower right is the edge detected image with color quantization. Weisman allows the user to select the level of speckle reduction (light, moderate, or heavy) which have been processed by user selected parameters (column 13 lines 1-15). The purpose is to allow create the best quality images(see column 13 lines 1-2).

Bloom is a reference to allow a user to select the best parameter set for an image. It processes or filter a single image with multiple sets of parameters (see abstract and paragraph 28) to processes or filter the image. It allows multiple images to be displayed side by side (paragraph 39 and figure 5) to allow the user to select his preferred image from among the images processed with different sets of parameters.

In Weisman the operator apparently must choose the speckle reduction only by guessing the best parameters for speckle reduction without seeing the differing effects between for example heavy and moderate speckle (or toggling back and forth between the too however Weisman does not explicitly recite this and appellant argues on page 21 lines that Weisman does not disclose this because it applies the filtering options only in the alternative and apparently does not suggest performing more then one level of

speckle reduction). After reading Bloom one of ordinary skill in the art could see a clear advantage from applying Bloom to Weisman an image could be processed by all of the speckle reduction algorithms and displayed side by side to allow for an easy selection of the best image for the purposes of the operator.

Besides the clear advantage of the combination; the combination of these reference would be exceeding simple. The combination of Weisman and Bloom requires merely the application of all the speckle reduction option in Weisman, and displaying them to the operator prior to his selection of the best speckle reduction. Something well within the ability of one of ordinary skill in the art.

These references both deal with image processing and attempt to solve the problem same problem of allowing the user to decide the ideal filtering parameters. The fact the images and the processing which is being selected from in Bloom and Weisman is not important to the underlying concept of Bloom which is selecting between two differently filtered or processed image would be easier if both were applied side by side. The examiner did not suggest combining the specific types filtering of Bloom to Weisman but only the concept that selecting between two images which have been filtered by different parameters would be easier if the two differently filtered images were placed side by side.

Appellant argues

But, there is no legitimate reason to combine Weisman with Bloom as asserted by the Final Office Action. Weisman is concerned with diagnostic ultrasound imaging, or echocardiography, to evaluate the condition of the heart. Weisman describes that "it is desired to provide a user-friendly echocardiography workstation that improves image quality, provides automatic edge detection, quantitates endocardial wall movement, corrects for cardiac translation, calculates 3-D left ventricle volume, and assists the physician with the interpretation of echocardiograms." (See column 2, lines 35-42 of Weisman). In contrast, Bloom is merely concerned with digital still photography using a conventional digital camera. The digital camera disclosed by Bloom is not capable of producing ultrasound images of the heart, much less images of any other internal volume of the body and/or using any other type of imaging for producing images of internal volumes of the human body.

The examiner acknowledges that images in Bloom or Weisman are different, but the examiner did not suggest the combination of the images between Bloom and Weisman. The examiner did not suggest using Bloom to capture the images of Weisman. The examiner did not even suggest combining the types of image processing. The examiner only suggested the combination of the method of displaying side by side two differently filtered images to allow the user select the best filtering.

Appellant further argues

While an ultrasound system includes a relatively large amount of processing power to process relatively large sets of ultrasound image data, a conventional digital camera such as that disclosed by Bloom has limited processing power and is not capable of processing the relatively large sets of ultrasound data. Rather, the digital camera of Bloom merely takes still photographs of external objects. Bloom is therefore not analogous art to Weisman, especially because the processing filters and the type of images are different.

The examiner notes he did not suggest using the digital camera processor to process ultrasound data. The examiner suggested modifying the workstation to improve the method of selection between two filtering options disclosed in Bloom.

Appellant further states that one of ordinary skill in the art would not look to a camera which takes photographs to improve upon an echocardiography station. The examiner disagrees with this statement for multiple reasons.

After reading Weisman and Bloom it would be abundantly clear to one of ordinary skill in that the processes in Bloom could easily be used to improve over merely guessing at the best speckle reduction parameter (as discussed by the examiner above). One of ordinary skill in the art would find the implementation of the combination would be as simple as applying all the filtering levels of Weisman and the co-displaying of multiple filtered images as described in Bloom.

Furthermore both references solve the same problem of select the most appropriate processing using the selection of what the user feels is the most appropriate processing of an image. The underlying concept in Bloom is about how to select the best filtering operation(s). Bloom does not require any novel camera hardware. The alleged novelty in bloom is about a method of selecting the best filtering parameters which is applied in a digital camera environment. The alleged novelty in Bloom is about method of selecting the best filtering parameters by displaying multiple images to select a preferred set of filter parameters (this is clear from the summary see paragraph 4) which is applied to improve the known digital camera. Weisman also addresses the problem of selecting the ideal filtering parameters with user intervention (see column 13 lines 1-15), wherein the user can select both the level of speckle reduction and the color quantization

algorithms. It only makes sense one seeking to improve the user selection of filtering parameters would seek out references which focus on user selection of filter parameters. Characterizing Bloom as a digital camera reference does not really address the main concepts in Bloom.

Furthermore one of ordinary skill in the art would be well aware that the concepts which are used to process or improve camera images are often the same ones used to processes medical images. While the devices used to capture medical images and photographs are substantially different the methods of processing are frequently not. The methods for processing medical images and photographs are often modified to the specific application the underlying processing is often that different. For example, a screw used to make a baby crib and a screw used to make a telescope may be tweaked for the application but they are basically fasteners and one of ordinary skill on the art would be foolish not to consider whether or not a feature in one screw used to solve a problem in one application might not solve a similar problem in another application. These references are about processing digital images on a computer processor and displaying for ideal viewing them not the devices which captured them. While the data might be different one of ordinary skill in the art would understand that concepts in one may be applied to concepts in the other. The above combined with the clear motivation of improving the selection of the best filtering for the image makes Bloom easily relevant on one of ordinary skill in the art implementing Weisman.

Appellant further argues

In other words, the speckle reduction of Weisman is used to increase the viewability of diagnostically relevant images to preserve the clinical utility of such images. In contrast, Bloom is concemed with the variance in picture quality based on exposure conditions. (See page 1, paragraph [0002] of Bloom). Bloom does not even describe the filtering process of speckle reduction or any process similar to speckle reduction. The filtering processes described by Bloom, namely processing the images captured by the digital camera for contrast, tone mapping, sharpness, and illuminant correction, bear no relevance to speckle reduction or increasing the viewability and clinical utility of diagnostically relevant images. Rather, the filtering processes described by Bloom are merely used to allow a user to select the most aesthetically pleasing image. Bloom is therefore not analogous art to Weisman. One skilled in the art would not look to the filtering processes of Bloom for techniques that reduce speckle noise and/or increase the viewability and clinical utility of a diagnostically relevant image.

Again the examiner did not seek to combine the filtering processes of Bloom with those of Wiseman only the method of selection of the best parameters. Bloom provides a list of type of filtering or processing which could be performed (see paragraph 39) in conjunction with his method of selecting the best parameters but which types of processing is used are not really central to his method of selecting the best parameters (see paragraph 4). The examiner suggested the combination of the method of selecting the best parameters by co displaying differently filtered images not the processing algorithms themselves.

The examiner also strongly disagrees with the Appellants arguments with respect to viewability and clinical utility not being relevant to the selection of the user in bloom. In paragraph 39 Bloom states that the user selects what he or she believes is the “best” picture. Obviously the best picture to an operator in Weismann is going to be the most viewable and with the most clinical utility.

Again the examiner is not combining the image filtering algorithms or the devices of Bloom and Weisman which appellant keeps stressing. The examiner is combining the method of selecting the best filtering parameters by the user selecting co-displayed differently filtered images to the method user selecting filtering parameters of Weisman not the filter algorithms themselves or the devices.

Appellant further argues

The Final Office Action also asserts, on page 5, that it would be obvious to combine Weisman and Bloom "for the purpose of allowing the operator to choose the best speckle- reduced image." But, the filtering processes described by Bloom would not help an operator to choose the best speckle-reduced image. Rather, the filtering processes described by Bloom bear no relevance to reducing speckle noise. Accordingly, the multiple processed images displayed by Bloom would not instruct one skilled in the art to apply different levels of speckle reduction to the same raw image. No legitimate reason has therefore been provided for combining Weisman with Bloom and thus the Final Office Action has not set forth a prima facie case of obviousness.

The examiner notes again the examiner never suggested combining the filtering processes of Weisman and Bloom. The examiner is combining the method of selecting the best filtering parameters by the user selecting co-displayed differently filtered images to the method user selecting filtering parameters of Weisman not the filter algorithms themselves or the devices. The filtering processes in bloom are suggested in the alternative and clearly only examples of filtering processes which may be used (see paragraph 27 note the above processes are exemplary) in conjunction with his method of displaying multiple differently filtered images (see paragraph 4).

Appellant further argues

It is further submitted that Weisman teaches away from the combination with Bloom asserted in the Final Office Action. More particularly, Weisman teaches away from simultaneously co-displaying on a common

screen a first speckle-reduced image that is generated from the first image data stream and a second speckle-reduced image that is generated from the second image data stream, as required by each of independent claims 28 and 37. The edge detected and color quantization images displayed along with the speckle reduced image of Weisman are both generated from the speckle reduced image. Therefore, the edge detected and color quantization images each include the same speckle reduction parameters as the speckle reduced image. Weisman therefore teaches away from the multiple processed images displayed by Bloom. For example, rather than applying different speckle reduction parameters to the same raw image and selecting the best one therefrom, Weisman explains that "once the above [speckle reduction] filtering is applied to the video sequences and the image is captured at step 200, it is determined by the user whether or not to proceed with further processing" before applying the edge detection and color quantization filters. (See column 8, lines 26-28 of Weisman). In other words, rather than comparing differently speckle reduced images, Weisman describes applying further speckle reduction to the already speckle reduced images. In contrast to providing different levels of picture quality for selection of the best image, the raw data image, speckle reduced image, edge detected image, and color quantization image of Weisman are co-displayed to present the operator with different images of cardiac function to allow a user to view different physiological aspects.

The examiner strongly disagrees with appellant's allegation of teaching away. First the examiner cannot find any basis for the statement "Weisman describes applying further speckle reduction to the already speckle reduced images". While Weisman discloses applying more operations (edge detection and color quantization) after selecting a speckle reduced image. It does not suggest applying more speckle reduction to a speckle reduced image. Weisman still must select the best speckle reduction prior to moving on to the next steps. The examiner does not understand this argument. How does Weisman teach away from using Blooms method to determine the best speckle reduction parameters, then proceeding to the next steps? Weisman does not state or suggest that modifying his steps would not be combinable with co-displaying two images filtered by different speckle levels, nor would modifying Weisman with Bloom (as suggested by the examiner) change the nature of the operation or the function of Weisman. The examiner does not believe there is any basis for a conclusion that Weisman teaches away from the combination proposed by the examiner.

Appellant further argues

Appellants submit that Weisman and Bloom both individually fail to describe filtering a processed data stream with a first value set of speckle reduction parameters to produce a first image data stream, and filtering the processed data stream with a second value set of speckle reduction parameters to produce a second image data stream, wherein the second value set of speckle reduction parameters is different than the first value set, as recited by each of claims 28 and 37. Weisman does not describe that the same raw image is separately applied with two different levels of speckle. Weisman merely describes that the amount of speckle for a raw image can be selected as light, heavy, or moderate. Column 13, lines 1-10 of Weisman states that the physician can select the options of speckle reduction, border detection, and color quantization. When selecting speckle reduction, Weisman describes that the default level of speckle reduction is moderate, but instead of the default moderate speckle, the physician may choose light or heavy speckle. In other words, the raw image may be processed with light, moderate, or heavy speckle. Nowhere does Weisman describe that a physician can or does filter the raw image initially with a light, moderate, or heavy speckle reduction, and thereafter filters the same raw image with a different level of speckle reduction. Accordingly, although Weisman describes initially selecting between different levels of speckle reduction, applying different levels of speckle reduction to the same raw image is not a known element within Weisman.
Bloom also does not describe applying different speckle reduction parameters to the same raw image. Rather, Bloom does not even describe the filtering process of speckle reduction. Bloom describes processing the images captured by the digital camera for contrast, tone mapping, sharpness, and illuminant correction. However, nowhere does Bloom describe the filtering process of speckle reduction. Accordingly, Bloom does not describe applying different speckle reduction parameters to the same raw image. Because Weisman and Bloom each individually fail to describe one or more elements of each of claims 28 and 37, it follows that a combination of Weisman and Bloom cannot describe such element(s).

Here, Appellant is merely arguing the references separately. Weisman suggests multiples sets of speckle parameters (see column 13 lines 1-10). Bloom suggests applying multiple sets of parameters to the same image and co-displaying them. Appellant is trying to take a large clump of claim features and say that neither reference by itself discloses all of those features. This type of argument is not permissible in a 103 rejection. In response to appellant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Appellants arguments for the remaining dependent and independent claims are all based on the arguments presented for claim 28 and are not separately argued. Since the Examiner has demonstrated rejection to claim 28 should be upheld the remaining claims should be upheld as well.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/SEAN MOTSINGER/

Examiner, Art Unit 2624

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